0145P34US01

REMARKS/ARGUMENTS

Applicant gratefully acknowledges the thorough Examination to date and has made an effort to fully respond to all the issues raised by the Examiner. Applicant has taken care and believes that no new matter has been introduced by way of this amendment. Reconsideration of the application in view of the above amendments and following remarks is respectfully requested.

Applicant has amended the Abstract to conform with the amendments to the Specification and Claims. No new matter has been introduced in the Abstract.

Applicant has amended the Specification at paragraphs [0011], [0032], and [0043], to more clearly define terminology in the application with respect to discrete sensors, detection zones, and detection fields. As is well known in the art, discrete sensors can be classified as volumetric or non-volumetric. Applicant provides the following definition in respect of discrete sensors: "For the purposes of this document, discrete sensors are classified as either being volumetric sensors or non-volumetric sensors. Volumetric sensors are defined as each having an associated volumetric detection field. This is in contrast to non-volumetric sensors which are defined as having linear or planar detection fields, such as touch or contact sensors." In respect of the definition of detection zones and detection fields, Applicant provides the following defintion: "The discrete volumetric sensors each have an associated volumetric intrusion detection field extending therefrom and are constructed and arranged to generate a response to an intruder entering its detection field. Each sensor node in the sensor array has a detection zone defined by the effective detection fields of its constituent sensors as constructed and arranged in each sensor node." Applicant has also amended the range in paragraph [0032] related to the spacing between sensor nodes to expand the range by 0.25 meters. The range provided in the originally filed subject application relates to a preferred embodiment. Therefore, the expansion of the range does not constitute the

introduction of new matter as it would have been obvious to the skilled artisan that this preferred range could have been expanded within the teachings of the present invention.

Applicant respectfully submits that support for the aforementioned amendments can be found in the Specification as originally filed. For instance, the definition of a detection zone is stated in paragraph [0036], as "each of the detection zones 65A, 65B, 65C are comprised of one or more detection fields...the detection zone 65a has a subset of detection fields (not shown) for each discrete sensor 100a, 101a...". Furthermore, paragraph [0043] discusses "discrete sensors are selected for their phenomenology and specific detection features, such as detection fields, size, shape, and parameter." Paragraph [0044] also discusses "discrete sensors may also be selected or their fields oriented for compatibility, for example non-interference of microwave sensors", which lends support to the definition of volumetric sensors as "having an associated volumetric detection field".

Applicant has amended the Specification at paragraphs [0018], [0019], and [0020] to conform the statements of invention of the independent Claims as amended.

Rejections of Claims 1 through 9 and 12 through 17 under 35 USC 103

The Examiner objects to Claims 1 through 9 and 12 through 17 under 35 U.S.C. 103(a) as being unpatentable over Frederick, U.S.PN. 4,209,776, in view of Karas, U.S.P.N. 4,327,358.

The Examiner states:

> "Frederick discloses an intrusion detection system using a sensor array comprising sensor nodes 22 with inherent longitudinal axis with detection zone transverse to axis, sensors 26 response to intruder for providing detection indication, and array processor means 54 for processing detection data to determine if an intrusion has been detected (col.5, lines 46-62), except for specifically stating that detection zone comprises a plane."
>
> "Karas teaches desirability of using a transverse detection plane (Fig. 1) above a fence or wall in order to determine when an intruder attempts to scale into a protected area."

"It would have been obvious to use a detection plane as suggested by Karas in conjunction with an intruder detection system as disclosed by Frederick, in order to only indicate intrusion when a wall was being scaled, thus avoiding nuisance alarms when authorized individuals were just near a wall."

"Regarding claims 3-5, Frederick discloses plural sensors 26, ultrasonic detectors (col.4, line 1) and power input point (Fig. 6)."

"Regarding claims 6-7, Frederick teaches use of sensor node 22 integrated with deformable cable 8. Choosing to encase the node into the flexible cable would have been obvious, in order to allow the cable to be rolled more easily to aid installation, the specific size of the sensor node not affecting its function."

"Regarding claim 8, since Frederick teaches mounting sensor on circuit board (col. 4, line 45), choosing to use an IC for the sensor would have been obvious, in order to allow a smaller space to be used, while still allowing processing of detected data."

"Regarding claim 9, Frederick teaches using overlapping sensor zones (col. 4, lines 3-8)."

"Regarding claims 12-14, Frederick teaches preset placement of sensors to allow overlapping coverage of protected area (col. 5, lines 3-12). Since Frederick teaches spacing of about 18 feet, choosing to use a spacing somewhere between 0.5 and 20 meters would have been satisfied."

"Regarding claim 15, Frederick teaches providing an alarm indicative of intrusion (col. 6, lines 33-52)."

Applicant has amended Claims 1 and 15 to more clearly define the present invention. The Examiner's attention is drawn to the preamble and body of Claims 1 and 15 respectively which include the limitation "a plurality of discrete volumetric sensors each having an associated volumetric intrusion detection field extending therefrom..." and to the body of both Claims 1 and 15 which provide for "a plurality of sensor nodes each having at least one volumetric sensor and having a detection zone defined by the effective detection fields of its constituent sensors as constructed and arranged in each sensor node". Applicant has also cancelled dependent Claims 2, 3, 11, and 16, and amended dependent Claims 4 through 10, 12 through 14, and 17, to correct the dependencies and provide proper antecedent basis for various expressions. Support for amendments to independent Claims 1 and 15 are found in the Specification as originally filed and amended.

With respect to the Frederick reference, Frederick does not teach the use of a plurality of discrete volumetric sensors at individual sensor nodes in the array. Rather, Frederick teaches fence surveillance systems which include relatively rigid electrical conduits coupled by suitable coupling devices and junction boxes having both an ultrasonic sensor and a vibration sensor. Moreover, Frederick clearly teaches in column 6, lines 10 to 17, that the ultrasonic disturbance and the fence vibration are both needed to cause an alarm. The vibration sensor taught by Frederick is not a discrete volumetric sensor as defined in the present invention. Furthermore, Frederick does not contemplate the use of at least one sensor node having with at least two discrete volumetric sensors, either exclusively or in combination with non-volumetric sensors. Therefore, Applicant respectfully submits that Frederick does not teach, nor fairly suggest a sensor array having "a plurality of sensor nodes each having at least one volumetric sensor and having a detection zone defined by the effective detection fields of its constituent sensors as in Claims 1 and 15.

With reference to the Karas reference, Karas does not teach a sensor array but rather teaches a single sensor having a detection zone defined by a volume extending upwardly between the corner reflector antenna from the longitudinal axis defined by the leaky coaxial cable. The Examiner's attention is drawn to the Karas reference which teaches: "[r]eflections caused by intrusions across the air space illuminated by the radiated energy from the corner reflector are received and the leaky coaxial cable 11 conducts the reflections back to the electronic signal processing circuitry..." (see col. 3, lines 9-13). Applicant respectfully submits that there is no discussion in the Karas reference a plurality of sensor nodes each sensor node having at least one sensor and at least one sensor node having at least two sensors as claimed in the present invention. Rather, the Karas reference teaches an intrusion detection sensor having a physical deterrent barrier, such as a fence, and a corner reflector antenna mounted on the top of and coextensive with the barrier, in which the lone active element is a leaky coaxial cable that extends the length of the reflector to conduct reflections back from intruders. In the Karas reference, a single distributed sensor is taught which requires many wavelengths of cable length for detection, and each length of which is connected to a costly radar

processor. By comparison, the present invention is claimed in terms of an array having a plurality of sensor nodes.

Moreover, the teaching of a leaky cable for fence applications in the Karas reference clearly directs the skilled artisan away from the present invention which is related to a sensor array for wall or roof-edge applications. It is important to note that in practice the leaky cable "leaks" in all directions and is not confined by wires because it behaves as a transmission line. This "leaking" results in non-uniform detection along the length of the leaky cable, and each length of the leaky cable further requires a start up distance for the leakage field to reach a stable level for detection purposes. Accordingly, the teachings of the Karas reference would not direct the skilled artisan to teach nor fairly suggest a sensor array having "a plurality of sensor nodes each having at least one volumetric sensor and having a detection zone defined by the effective detection fields of its constituent sensors as constructed and arranged in each sensor node". Applicant therefore believes that independent Claims 1 and 15 include patentable subject matter not taught by Karas, either taken alone or in any combination.

In relation to the rejection of the dependent Claims 4 through 9, and 12 through 14, and through 17, Applicant respectfully submits that the subject matter of the Claims includes the limitations of base Claims 1 and 15 which are believed to be allowable in view of the above made remarks. As such, Applicant respectfully submits that the rejection of the dependent Claims 2 through 9, and 12 through 14, and 16 through 17 has been overcome.

Rejection of Claim 10 under 35 USC 103

The Examiner objects to Claim 10 under 35 U.S.C. 103(a) as being unpatentable over Frederick, in view of Karas, and Runyon et al., U.S.P.N. 6,323,773.

The Examiner states:

> "Runyon discloses desirability of having detection zones abut without overlapping (col. 3, line 63)."

> "It would have been obvious to use intrusion sensor zone abutment as suggested by Runyon in place of overlapping zones in a system as disclosed by Frederick and Karas, in order to be able to more particularly indicate exactly where an intrusion occurred."

Applicant incorporates herein three remarks made above in respect of Claim 1, as Claim 10 includes the subject matter of Claim 1, which Applicant submits is patentable, and therefore overcomes the specific rejection. Nevertheless, Applicant respectfully submits in respect of the Runyon reference that there is no teaching of an array of discrete sensors but simply a combination of at least two sensors, monitoring a space, which might, at best, constitute an array of single-sensor sensor nodes, or a single dual-sensor sensor node, neither of which falls with in the scope of the Claims. Moreover, the Runyon reference does not teach a sensor array having "a plurality of sensor nodes each having at least one volumetric sensor and having a detection zone defined by the effective detection fields of its constituent sensors as constructed and arranged in each sensor node". There is also no motivation to combine the teachings of the Runyon reference with that of the Frederick reference and the Karas reference, as Runyon teaches an alerting device specifically directed toward alerting a person of a risk that is in "a predetermined space proximate to the risk". The prior art references, Frederick and Karas, relate to intrusion detection systems using specialized sensors. Accordingly, Applicant respectfully submits that the subject matter of Claim 10 is patentable over Frederick, in view of Karas, and Runyon et al.

Rejections of Claims 18 through 20 under 35 USC 103

The Examiner objects to Claims 18 through 20 under 35 U.S.C. 103(a) as being unpatentable over Frederick, in view of Karas, and Osako et al., U.S.P.N. 6,717,515.

The Examiner states:

> "Osako discloses desirability of providing sensor sensitivity adjustment by calibration in an intrusion detection system (abstract)."
>
> "It would have been obvious to use calibration of sensors as suggested by Osako in conjunction with intrusion sensors as disclosed by Frederick and Karas, in order to allow adjustment of sensor sensitivity, in order to obtain accurate detection of intrusion for varying conditions."

Applicant respectfully submits that the Osako reference teaches communication means from a mobile console to an array of sensors. Applicant has amended Claim 18 to include similar limitations as in Claims 1 and 15, at least one sensor array having "a plurality of sensor nodes each sensor node having at least one volumetric sensor and having a detection zone defined by the effective detection fields of its constituent sensors as constructed and arranged in each sensor node..." Osako clearly does not teach nor fairly suggest the subject matter of Claim 18. There is also no indication that the Osako teachings relate to intrusion detection systems, or the nature of the sensors' detection pattern, e.g. overlapping, contiguous, etc., for any particular function. Accordingly, there is no motivation to combine the Osako reference with the other cited prior art references, Frederick and Karas. Moreover, none of the cited prior art references taken alone or in any combination teach the subject matter of Claims 18 and 20. Therefore, Applicant respectfully submits that Claims as amended are allowable in their current form.

In sum, the Applicant believes that all of the Claims in the subject application include patentable subject matter and that none of the references either taken alone or in any combination teach the limitation of "a plurality of sensor nodes each having at least one volumetric sensor and having a detection zone defined by the effective detection fields of its constituent sensors as constructed and arranged in each sensor node" as provided in independent Claims 1, and 15, and similarly in Claim 18.

Allowable Subject Matter

The Examiner has stated that Claim 11 would be allowable if rewritten in independent form including all of the limitations of the base Claim 1 and intervening Claim 2. By way of amendment, Applicant has cancelled Claim 11 but incorporated substantially the same subject matter into Claims 21 through 23, which are believed to be allowable over the cited prior art. Therefore, Claims 21 through 23 in their current form should be deemed allowable.

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New Claims

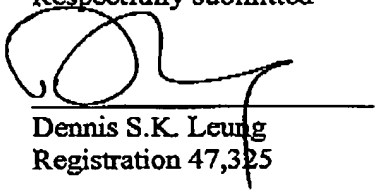
Applicant has added dependent Claims 21 through 26 to cover patentable aspects related to the spacing between adjacent sensor nodes and the inclusion of discrete non-volumetric sensors in at least one sensor node. Applicant believes that Claims 21 through 26 are allowable as they depend from patentable base Claims.

Conclusion

Applicant respectfully submits that the outstanding rejections under 35 USC 103 have been overcome by the above amendment. Applicant has made an effort to more clearly define the invention and believes that no new matter has been entered during this process. Applicant respectfully submits that all of the claims presently standing in the application are patentably distinguished from the teachings of all references of record either taken alone or in any combination. Accordingly, reconsideration and allowance of this application is respectfully solicited.

The Commissioner is hereby authorized to debit any underpayment or credit any overpayment to the USPTO deposit account no. 16-0600 should any additional fees be necessary.

Respectfully submitted



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